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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/029,507	10/22/2001	Avinash Dalmia	03141-P0382A	4581
24126	7590	12/28/2004	EXAMINER	
ST. ONGE STEWARD JOHNSTON & REENS, LLC 986 BEDFORD STREET STAMFORD, CT 06905-5619			OLSEN, KAJ K	
			ART UNIT	PAPER NUMBER
			1753	

DATE MAILED: 12/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/029,507

Applicant(s)

DALMIA ET AL.

Examiner

Kaj K Olsen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 October 2004.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-29 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-14 and 16-29 is/are rejected.  
7) ☒ Claim(s) 15 is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 27-29 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kurnik et al (USP 5,989,409).

3. Kurnik discloses an electrochemical sensor that comprises a substrate having a surface with first and second electrodes deposited on the surface of the substrate (fig. 1A-3A and col. 8, lines 12-26). Kurnik discloses an electrolyte material in electrical contact with the first and second electrodes for carrying a flow of current (col. 1, lines 25-33; col. 11, lines 8-25; and fig. 4). The electrodes of the sensor preferably have a thickness that includes less than one micron and are preferably nonporous (col. 8, lines 12 and 13 and line 58-60). A nonporous material would inherently have a porosity of less than 5% and pore sizes less than the claimed amount because “nonporous” reads on a material having a negligible amount of pores and having negligible pore sizes. With respect to the pore sizes being greater than 0  $\mu\text{m}$ , that would essentially read on any material that is anything less than entirely nonporous. In the manufacture of any given material, a small number of very small pores would presumably be inherent in the material (col. 8, lines 15-20). All of these manufacturing means would presumably leave some number of very small pores in the electrode (whether desired or not). In addition, applicant

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appears to evidence that a material being construed as being “nonporous” can actually have small pores (see claim 9). Hence, the nonporous material of prior art would inherently have some microscopic pores. Alternatively, Kurnik discloses that although nonporous is preferred, porous materials are also anticipated (col. 8, lines 12 and 13). If both nonporous and porous materials are both anticipated, then one possessing ordinary skill in the art would have been motivated to utilize an electrode having pores smaller than 0.12 or 0.05 or 0.01  $\mu\text{m}$  because said material would meet Kurnik’s desire for a “porous or non-porous, preferably non-porous” (col. 8, lines 12 and 13) material for the electrode. With respect to the sensor being a “gas sensor”, that is only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

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invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-14 and 16-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurnik in view of Pritchard et al (USP 5,767,770). Pritchard is being cited for the first time with this office action.

7. Kurnik discloses all the limitations of the claims (see previous office action and the rejection above), but does not disclose the presence of a thickness of the electrode that is less than 0.2  $\mu\text{m}$ . However, Kurnik does disclose the desirability of thin electrodes and teaches downwards to 0.25  $\mu\text{m}$  (col. 8, lines 58-60). Pritchard discloses in an alternate electrochemical sensor that the electrodes of that sensor can be manufactured with 0.1  $\mu\text{m}$  electrodes (col. 3, lines 39-42). This would indicate to one possessing ordinary skill in the art that the electrodes of Kurnik could be manufactured with a thickness that is less than 0.2  $\mu\text{m}$ . It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Pritchard for the sensor of Kurnik because thin electrodes are desired by Kurnik and said thin electrodes utilize a smaller amount of precious metals like gold and platinum, thereby saving manufacturing cost.

8. Claims 1-14 and 16-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pritchard in view of Kurnik.

9. Pritchard discloses an electrochemical sensor comprising a substrate 2 or 7 having a surface with first and second electrodes (4, 5) deposited on that surface, where both electrodes are spaced apart from each other (fig. 1 and col. 3, lines 22-47). Pritchard further discloses placing a material in contact with the electrodes to effect electrochemical measurement (col. 4,

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line 14 through col. 5, line 20). Kurnik evidences that such the material of Pritchard would read on the claimed “electrolytic material” giving the claim language its broadest reasonable interpretation (col. 1, lines 25-40). Pritchard does not explicitly recite whether the electrode in question is porous or non-porous. However, Kurnik teaches in an alternate electrochemical sensor that it is preferred that the electrodes of a biosensor be nonporous (col. 8, lines 12 and 13). There are a number of reasons one would prefer the use of nonporous electrodes. They provide a more reproducible surface area (which is desired by Pritchard, see col. 3, lines 33 and 34). They are also less susceptible to contamination (like oxidation) because less surface area of the electrode is exposed (which is also desired by Pritchard, see col. 3, lines 37-42). Finally, nonporous metals are readily available as foils or sheets (col. 8, line 15), thereby simplifying sensor construction. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Kurnik for the sensor of Pritchard because non-porous materials have constant reproducible surface areas, less susceptible to contamination, and are readily available for manufacturing.

10. With respect to the process of manufacturing the electrode, the determination of patentability for the claim is based on the product itself. Because the product of the claim is identical to the invention of Pritchard the process from which it was made is the same as or obvious over the process utilized by Pritchard (see *In re Thorpe*, 777 F.2d 695, 698). However, Kurnik discloses a number of conventional means for manufacturing electrodes (col. 8, lines 13-26).

11. With respect to hydrating with an acidic solution, the electrolytic material of Pritchard is held at an acidic pH with a buffer (col. 4, lines 23-47) and the sample plus the acidic buffer

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would ensure the electrolyte would be acidic. Alternatively, Kurnik teaches that sensors should be operable over a broad pH sample range (col. 10, lines 35-42) and the electrolyte would be hydrated by an acidic sample. With respect to the particular percentage of acidic material utilized for the acidic solution, finding the appropriate level of acidity for arriving at the desired pH range requires only routine skill in the art.

### ***Allowable Subject Matter***

12. Claim 15 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. The prior art does not disclose nor render obvious all the limitations of claim 1 and further comprising a reservoir for containing solution to hydrate the electrolyte.

### ***Response to Arguments***

14. Applicant's arguments filed 10-12-2004 have been fully considered but they are not persuasive. With respect to the rejections of claims 1-14 and 16-26, applicant urges that the cited art is from a different field of endeavor from that of gas sensors and would not have been considered in a rejection under 35 USC 103. The examiner is unclear what the applicant is specifically referring to here. The two references being utilized to reject these claims are both from the same field of endeavor (i.e. electrochemical glucose sensing). If the applicant is alluding to the fact that these two references aren't from the same endeavor as gas sensing (although applicant never explicitly makes this argument), that would be irrelevant. The gas

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sensing of the instant invention still just constitutes the intended use of the claimed sensor and the intended use need not be given further due consideration in determining patentability. This lack of need for further due consideration applies whether the claims were rejected as being anticipated or were rejected as being obvious over the prior art.

15. Applicant urges that Pritchard and Kurnik would not work when subjected to a gaseous mixture because Kurnik and Pritchard require a drop of fluid or a liquid of gel to function. This is a confusing point because this same argument could presumably be made for the instant invention. Namely, in the absence of a suitable substance for establishing ionic conductivity, the gas sensor of the instant invention could not sense a gas. However, both the instant invention and the prior art reading on the claimed instant invention disclose the presence of an appropriate substance for establishing ionic conductivity. See Kurnik, col. 1, lines 25-33 and col. 11, lines 8-25.

16. Applicant also urges that the prior do not contemplate measuring a gas. This point is irrelevant because it is unnecessary for the prior art to *contemplate* an intended use when the intended use need not be given further due consideration in the first place.

17. With respect to this continual emphasis of the intended use of the claimed sensor, the examiner urges that there are a number of structural features of gas sensing that would presumably not be present on the types of sensor of Kurnik and/or Pritchard. In particular, the examiner sees a number of features of fig. 1 and 2 of the instant invention that are unique to gas sensing that are typically not found in the biological sensing of Kurnik or Pritchard. For example, the use of solid electrolyte materials like Nafion or the use of liquid electrolyte reservoirs for hydrating the solid electrolyte (note the examiner has withdrawn the rejection of



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claim 15). If the applicant desires to have the claims of the instant invention read free of the biological sensing of prior art like Kurnik or Pritchard, the examiner recommends the applicant simply claim some of these features that are unique to gas sensing.

18. With respect to the rejection of claims 27-29, applicant urges that Kurnik does not disclose the specifically claimed range of porosity. However, to meet this claimed range, all the prior art would require is the presence of a single pore larger than 0 but less than .12  $\mu\text{m}$ . It is not necessary for the prior art to disclose the actual range set forth by the applicant. The presence of a single pore in that claimed range is either anticipated by, or render obvious over Kurnik for the reasons set forth in the previous office action and above.

### *Conclusion*

19. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaj Olsen whose telephone number is (571) 272-1344. The examiner can normally be reached on Monday through Thursday from 5:30 A.M. to 3:00 P.M. and on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen, can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AU 1753  
December 27, 2004

  
**KAJ K. OLSEN**  
**PRIMARY EXAMINER**